



IN REPLY REFER TO:

## United States Department of the Interior

**FISH AND WILDLIFE SERVICE**  
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FWS/RD

June 24, 2004

Brigadier General William T. Grisoli  
Commander, Northwestern Division  
U.S. Army Corps of Engineers  
P.O. Box 2870  
Portland, Oregon 97208-2870

Dear General Grisoli:

The U.S. Fish and Wildlife Service (Service) has received your letter and supporting documentation of June 7, 2004, regarding Reasonable and Prudent Alternative (RPA) element VII.1.b of the Service's 2003 Amendment to the 2000 Biological Opinion on the Operation of the Missouri Main Stem, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project, and Operation of the Kansas River Reservoir System (2003 Amended Biological Opinion). At the Service's request, you provided supplemental documentation on June 16 and June 23, 2004. We treat your submissions to us as the Corps' determination, under 50 CFR 402.15(a), of compliance with Section 7(a)(2) of the Endangered Species Act.

RPA element VII.1.b. of the Amended Biological Opinion provides that when approximately 1,200 acres of new shallow water habitat have been made available to pallid sturgeon, the Corps, in consultation with the Service, may modify flows to take advantage of that habitat and more fully meet project purposes. In letters and supporting materials, the Corps documents its 2004 habitat construction and restoration efforts and estimates a range of 1,395 to 1,785 acres of new shallow water habitat will be available to pallid sturgeon by July 1, 2004. Based on review of the Corps' documentation, our analysis, and deference to expertise of the Corps, the Service accepts the Corps' determination that 1,200 acres of new shallow water habitat will be available to pallid sturgeon July 1, 2004. and the Service concludes that the proposed operation in your June 7 letter meets the requirements set forth in RPA VII.1.b.

As previously advised in our letter of March 5, 2004, the Service concurs in the request to include the geographic reach of river from Ponca State Park to the Osage River in the area for new shallow water habitat construction. We reiterate our concurrence and incorporate the March 5 letter and attachment by reference.

The Service notes the significant progress and demonstrated commitment of the Corps to additional pallid sturgeon conservation efforts identified in the 2003 Amended Biological Opinion. These include hatchery assistance, habitat construction, collaborative pallid sturgeon research planning and funding, and establishment of a monitoring plan for pallid sturgeon and their “new” habitat. The Service particularly compliments the basin-wide cooperative approach used by the Corps this spring to establish future research needs for pallid sturgeon. The Corps identified and included the best pallid sturgeon expertise available in the scientific community at large, and we believe that this approach will yield better results by using a collaborative process for planning research which will yield more widely supported results.

The Corps must continue to fully comply with the terms and conditions of the Incidental Take Statement for Interior least tern and piping plover. Our analysis indicates that the Corps’ proposed operations are in accordance with Reasonable and Prudent Measures.

The Service continues to encourage restoration of the Intake Diversion on the lower Yellowstone River, a project that would yield significant additional sturgeon habitat. We also emphasize establishment of the Missouri River Recovery Implementation Committee (MRRIC). The Service also notes that the current low water situation at Fort Peck Dam provides an ideal time to perform the feasibility analysis related to construction of a temperature control device at the Dam, as required in RPA element VII.1.a.

In closing, the Service appreciates the progress made by the Corps to address endangered species conservation on the Missouri River this year, in accordance with the terms and the intent of the 2003 Amended Biological Opinion. The Service remains committed to being a full partner in this ongoing effort, especially with respect to the design of monitoring regimes essential to inform future decision-making.

Sincerely,

Robyn Thorson  
Regional Director

Enclosure

Enclosure  
Letter to U.S. Army Corps of Engineers  
June 24, 2004

Background and Chronicle of Activities

In November 2000, the U.S. Fish and Wildlife Service (Service) issued a biological opinion to the U.S. Army Corps of Engineers (Corps) for operation of the Missouri River. The 2000 Biological Opinion concluded that the Corps' proposed river operations were likely to jeopardize the pallid sturgeon, least tern, and piping plover. In order to avoid jeopardy, the 2000 Biological Opinion included (among other measures) a Reasonable and Prudent Alternative (RPA) that specified summer flows at 21,000 cubic feet per second (cfs).

In response to a request by the Corps for reinitiation of consultation, in December 2003 the Service issued an Amended Biological Opinion that determined summer low flows were no longer required for avoiding jeopardy to the least tern and piping plover, but that flows, as well as mechanically created habitat were still needed to avoid jeopardy to the pallid sturgeon. Based on data showing that there is minimal difference in shallow water habitat between flows at 21,000 cfs and 25,000 cfs, the 2003 Amended Biological Opinion prescribed summer low flows of 25,000 cfs but allowed flexibility to change this regime. RPA element VII.1.b provides that creation of 1200 acres of new shallow water habitat available to sturgeon (representing the amount of shallow water habitat lost in the rise from 21,000 to full service navigation) could be the basis for justifying further consultation between the Corps and the Service to address modification of flows to more fully meet Corps project purposes. Stated more simply: if the Corps mechanically created 1200 acres of shallow water habitat available to sturgeon to offset the habitat loss associated with higher flow levels, the Service could consider allowing flows to increase toward full service navigation.

In January 2004, the Corps committed to pursue this provision in RPA element VII.1.b., and create 1200 acres of shallow water habitat. The Corps targeted July 1, 2004, as the due date for accomplishment of this goal. Since that decision in January, the Corps has aggressively addressed shallow water habitat construction, and the Service has provided technical assistance and cooperation through written and on-site assessment and guidance. The Corps and Service interacted daily to identify potential habitat projects, refine definitions for shallow water habitat projects, visit sites, and work through problems. Key issues from this interchange are documented in correspondence between the Corps and the Service, indexed in the Corps' June 2004 shallow water habitat report and incorporated by reference. As stated in the Service's letter of March 5, 2004, the Service fully contributed toward the Corps' construction goal because "aggressive implementation of RPA element VII.1.b. and acceleration of shallow water habitat development both address an immediate need for survival and recovery of the pallid sturgeon."

In accordance with a mutually established schedule, on June 7, 2004, the Corps sent the Service a letter and documentation to illustrate shallow water habitat construction of the past four months and to request consultation for an increase in flow levels to 30,000 cfs based on that accomplishment. The Corps estimated a range of between 1,420 and 1,810 acres of new shallow water habitat would be completed and available to pallid sturgeon by July 1, 2004 and provided its supporting data. The Service Management Team, which oversees implementation of the 2003 Amended Biological Opinion and its RPAs, assembled a Technical Team made up of individuals who had worked with the Corps in the development of the shallow water habitat, to evaluate the data provided with the June 7 letter. The charge to this Technical Team was to address the following:

Does the shallow water habitat constructed by the Corps meet the criteria established/agreed to in the 2003 Amended Biological Opinion and at the three meetings (one in Kansas City, two in Ft. Snelling, Minnesota) between the Corps and the Service?

Was the methodology used by the Corps reasonable, was it logical, and were the assumptions used appropriate? What are the uncertainties, if any, surrounding the assumptions made by the Corps in preparing their shallow water habitat evaluation? How do these uncertainties relate to the Corps' conclusions?

On June 9 the Technical Team concluded that, based on the information in the report from the Corps, they could not document that the Corps' estimated 1,420 to 1,810 acres of new shallow water habitat would be available for use by pallid sturgeon. Based on the Technical Team's comments, on June 10, 2004, the Service Management Team asked the Corps for additional information (confirmed in a June 14 letter from the Service) specifying questions that needed to be addressed. Supplemental information was provided by the Corps on June 16, 2004, and the Management Team evaluated that information. To further address remaining Service questions, on June 23, 2004, the Service Management Team and two representatives of the Technical Team held a telephone conference with Corps engineers and managers and, based on requests for additional information raised in that call, the Corps provided additional documentation on June 23. On June 24, 2004, the Management Team conferred and, considering the totality of information in the record and deferring to Corps expertise in hydrology and engineering, determined that the estimated range of new shallow water habitat created by the Corps would exceed 1200 acres on July 1, 2004. The written materials from the Corps and the Service's Technical Team are all incorporated by reference.

#### Evaluation of Shallow Water Habitat Construction Projects

In the first half of 2004, the Corps undertook construction projects for significant changes to the Missouri River between Ponca State Park and the confluence with the Osage River in order to mechanically create and restore pallid sturgeon habitat. The level of habitat work and accomplishment are unprecedented. As documented by the Corps, aquatic habitat projects in this stretch of river this year include 427 traditional dike notches, 119 type-B notches, 91 revetment notches, 78 chevron-major dike modifications, 75 bank notches, 7 pilot channels, 4 dredging projects, and 3 chute restorations.

Based on documentation from by the Corps and the first-hand knowledge of the Service as a partner in providing technical assistance on these projects, we confirm that these construction projects were accomplished. Except as noted herein, the projects documented by the Corps meet the definitions and habitat project descriptions defined by the Service as provided in our technical assistance as these projects were being designed and developed.

Acknowledging the construction projects qualified as pallid sturgeon habitat projects, the next step is to address the amount of habitat (in acres) newly available to pallid sturgeon that resulted from these projects. The Service gives deference to the engineering, modeling, and hydrological expertise of the Corps in calculating the effects and habitat acres gained by construction projects, with the exception of items identified below regarding bank notching, Type B notches, and dredging. The Service has no contradictory data to suggest that the other habitat acreages provided by the Corps are inappropriate.

Bank notching: Missouri River experts acknowledge that widening of the top width of the river is one of the premier habitat restoration elements. Therefore, we support the maximum acreage figures for bank notching (450 acres).

Type B notches: The Service does not support crediting any of the acreage (124) for Type B Notches. Type B notches are relatively new and the Corps indicates it has limited experience with their development. At the present time, we believe that available data show that Type B notches add valuable habitat diversity to an area but we have not seen data indicating that they create new habitat (i.e., habitat locations shift but there appears to be no net gain).

Dredging: Ponca Backwater Restoration, Soldier Bend, and Tyson Bend, will address the broader shallow water habitat program addressed under RPA element III, but do not meet the definition of shallow water habitat as provided by the Service for RPA element VII.b.1. They involve dredging of backwater (calm) areas with no restoration of flows through the project. They add up to 135 acres by the Corps' calculations. Although the Service rejects the 135 acre total, we accept 20 acres of shallow water habitat for dredging that occurred at the front end eddies of those project locations

Documentation and expertise of Corps and Service personnel dealing with pallid sturgeon habitat issues on the Missouri River agree that habitat construction benefits pallid sturgeon when it increases the diversity of main channel aquatic habitat (depths and velocities); improves the connection between the river and floodplain; provides off-channel habitats for potential spawning areas; increases the biological productivity of the ecosystem to provide secondary benefits to pallid sturgeon (e.g., more invertebrate food production); and decreases the amount and impacts of "hard structures" on the river, promoting a more natural river channel that can be used as a basis for future flow pulses

that emulate a natural hydrograph and mimic the cut-and-fill alluviation associated with normal river meandering.

The Corps' shallow water habitat projects contribute to greater diversity of habitat in the river. River ecology literature suggests that habitat diversity, especially with regard to depth and varying velocities, is required in order to approximate a riverine system with more normal channel characteristics and flow patterns. These systems produce more refugia areas for young fish, produce more aquatic invertebrates and thus enhance survival at early life stages in fish, including pallid sturgeon. The highly channelized, trapezoidal profile of the lower river between Sioux City and the Osage River precludes successful survival of drifting larvae into slightly flowing backwaters allowing for maturation to juvenile stages. The Service and basin scientists suspect that this stretch of river has been a formidable limitation to pallid sturgeon recruitment in the Missouri River system and therefore targeted this area for habitat improvements. The construction projects by the Corps have begun to improve this river stretch.

The biological benefits of these sites are not inconsequential. Dike notching and other "de-construction" projects restore missing pieces of the pallid sturgeon's living environment, and these projects create significantly more diversity of main channel aquatic habitat (depths and velocities). These projects will also improve the connection between the main river channel and off-channel areas, increase the off-channel habitats for potential spawning sites, and increase the biological productivity of ecosystems with secondary benefits (e.g. more invertebrate food production) to pallid sturgeon.

The Service also recognizes that the establishment of this habitat improves the overall quality, quantity and diversity of the aquatic environment in the lower river. Altered aquatic environments have been hypothesized in our recent biological opinions as a major factor in increased pallid sturgeon hybridization with shovelnose sturgeon, thus, altering the genetic integrity of the species. Data suggests that pallid and shovelnose sturgeon are reproductively isolated in less altered habitats such as the upper Missouri River. The Service believes that the replacement of this shallow/slow water habitat, when coupled with a more normalized flow regime, will provide some of the missing ecological pieces currently precluding the recruitment of pallid sturgeon.

As described in the 2003 Amended Biological Opinion, adaptive management is an integral part of the RPA. Adaptive management is described in the 2003 Amended Biological Opinion, and provides for application of best practices by an incremental approach to natural resource issues. The knowledge acquired from choices is analyzed and applied to determine whether alterations to policy choices are warranted. Monitoring is extremely essential in evaluating the quality of habitat created and the attributes of the habitat guiding best practices in order to apply adaptive management principles. The Corps needs an aggressive monitoring regime. This monitoring should include an analysis of studies already done that document the effects of various habitat modification strategies. The Service cannot underscore enough the important role that monitoring data will play in informing future management decisions.

### Geographic Reach of River for Habitat Development

As discussed at our January 26, 2004, meeting in Omaha, Nebraska, and reflected in the Corps' letter of February 13, 2004, the Corps provided new information to support a request that RPA element VII.1.b be applied from Ponca State Park to the mouth of the Osage River, and not be limited to the Sioux City to Platte River reach originally identified in the 2003 Amended Biological Opinion. We evaluated this new information and, as stated in our letter of March 5, 2004, and its enclosure, we concurred with the Corps' request and noted that the appropriate place to document this change to the 2003 Amended Biological Opinion was during June evaluation on habitat construction and flows. Accordingly, the information and explanation from the Service's March 5, 2004, letter and attachment are incorporated herein, and the Corps will be credited for habitat creation within the Ponca to Osage Reach of the Missouri River.